



Environment, Health & Safety Division

January 10, 2007

DIR-07-009

To: Howard K. Hatayama
Environment, Health and Safety Division Director

From: Richard DeBusk *Richard E DeBusk*
Environment, Health and Safety Division Safety Coordinator

Subject: 2006 Environment, Health and Safety Division Integrated Functional Appraisal

The Environment, Health and Safety (EH&S) Division conducted a triennial Integrated Functional Appraisal (IFA) of the EH&S Division during June and July 2006. The IFA team focused on work that involves higher or special hazards, formal authorizations, and permits.

The EH&S 2006 IFA Report is enclosed. It presents the IFA results and a description of the appraisal process. The IFA team reviewed five Facility-level authorizations, sixteen Formal (activity-based) authorizations, and four waste accumulation locations.

The IFA results indicate that the EH&S Division, with a few exceptions, has an adequate formal work authorization process that is generally effective in identifying and controlling hazards. Significant improvement was noted in housekeeping/organization of work and storage areas, especially at the HWHF. In general, excellent record keeping was observed for all authorizations. Four Findings (a deficiency with respect to standard or policy) and nine Observations were noted. IFA findings are to be tracked to completion in the Lab's Corrective Action Tracking System.

The Gun Barrels in Building 76 continue to be a seismic issue of concern that was noted in the previous IFA. The Gun Barrels are a low priority CATS item and represent a high cost corrective action. All possible institutional solutions continue to be explored vigorously.

Your Division Safety Coordinator, Richard DeBusk, is available to answer any questions (x2976).

cc: Maram Kassis

Lawrence Berkeley National Laboratory

Environment, Health and Safety Division



2006 Integrated Functional Appraisal

July 10, 2006

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Executive Summary

An Integrated Functional Appraisal (IFA) is a technical review of environment, safety and health (ES&H) activities and issues in relation to formal work authorizations.

The Environment, Health and Safety IFA covered all areas with formal work authorizations in the EH&S Division. The scope of the IFA was to review all work authorizations, technical work conducted under these formal authorizations and inspection of areas where this work is carried out. The EH&S Division has Radiological Work Authorizations, Sealed Source Authorization, Radiological Work Permits, Activity Hazard Document, permits for the Waste Management and Environmental services functions and relevant Safety Analysis Documents.

The inspection team was comprised of technical specialists from the following fields: radiation protection, industrial hygiene, occupational health, industrial safety, electrical safety, environmental services, and waste management. A representative from the Department of Energy (DOE) Berkeley Site Office (BSO) was invited and was able to participate as an observer during inspections.

Based on the work authorizations the operations of the following facilities were reviewed:

- Building 26, Technical Services Group

- Building 70, Pit Room

- Building 85 and outbuildings, Hazardous Waste Handling Facility.

- Building 75A, Calibration Lab

- Building 75C, Neutron Calibration Facility

All reviews consisted of meetings with the respective managers and physical site inspections.

The results of the Appraisal indicate that the EH&S Division, with a few exceptions, has an adequate formal work authorization process that is generally effective in identifying and controlling hazards. Significant improvement was noted in housekeeping/organization of work and storage areas especially at the HWHF. In general, excellent record keeping was observed for all authorizations. No single area within the EH&S Division was observed to have a large number of findings/observations and most deficiencies identified were minor.

Several noteworthy practices were identified during authorization reviews and work space walkthroughs.

- 1) The development of a "User Survey SOP" by the Technical Services Group detailing the steps required for routine user surveys of work and storage areas in their laboratory.
- 2) The Technical Services Group lead requires Appendix A permits for below human hazard work carried out by the EH&S electronic technologists.

In reference to two items of concern noted in the previous IFA, one continues to be an issue and one has been resolved. The Gun Barrels in Building 76 continue to be an issue of concern. Fundamentally, the Gun Barrels are a low priority CATS item as it is a very expensive proposition to fix and funding is not available. All possible institutional solutions continue to be explored vigorously. With regard to electrical safety in the Calibration Laboratory both EH&S staff are qualified electronics technologists per specialized training from Tom Caronna (Electrical Safety Specialist). Though not required by PUB3000, Appendix A permits have been created for any calibrations done on instruments that need to be opened and are connected to 110V. These include basic protocol information, and PPE. The first few of these were reviewed and concurred with by Tom Caronna. This issue has been addressed and resolved.

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1 Introduction

The Integrated Functional Appraisal (IFA) is a component of the Lawrence Berkeley National Laboratory's (LBNL's) integrated safety management (ISM) system, and forms one of the three tiers of LBNL's Environment, Safety and Health (ES&H) self-assessment program. An Integrated Functional Appraisal is conducted by the Environment, Health and Safety (EH&S) Division for each Laboratory division every three years.

The Environment, Health and Safety Division of Berkeley Laboratory conducted an Integrated Functional Appraisal of the Environment, Health and Safety Division during May-July of 2006. The Environment, Health and Safety Division's last IFA was performed in 2003.

1.1 Laboratory Management IFA Oversight

The EH&S Division and Office of Contract Assurance jointly oversee the implementation of the IFA. In response to changing Laboratory program audit needs, a steering committee was formed to assure that maximum audit effectiveness is achieved. The IFA Steering Committee members are listed in **Figure 1**.

Figure 1 2006 IFA Steering Committee

Member	LBNL Organization
Michelle Flynn	Office of Contract Assurance (OCA) – Chair
John Chernowski	OCA
Paul Blodgett	EH&S - Industrial Hygiene
Jack Salazar	EH&S – Liaison Coordinator
Richard DeBusk	EH&S - Occupational Safety
Ross Fisher	EH&S - IFA Coordinator

Some restructuring of the IFA process has been initiated whereby:

- The IFA team leader field guidance and IFA report template previously provided as separate documents have been combined into one document
- The IFA will include hazardous work¹ program compliance
- Line management authorized work and non-technical work are de-emphasized

¹ Work conducted under special hazardous work authorization or permits such as lock-out-tag-out, energized work, confined space work, surface penetration, fire safety, hoisting and rigging activities, ultra-centrifuge use, etc.

- Details of formal work authorizations and hazardous work permits will be audited
- IFA team leaders will gain Steering Committee approval of an appraisal plan before performing the IFA
- The IFA report will be reviewed by the Steering Committee prior to final acceptance by the IFA Coordinator
- Training will be provided for IFA leaders and their teams
- EH&S Liaisons will be allowed the opportunity to lead IFA teams for a division other than their assigned division

1.2 IFA Purpose

An IFA is a technical review of ES&H activities and issues in relation to formal work authorizations and facility permits/authorizations.

The purpose of the 2006 Environment, Health and Safety Division's IFA is to conduct an audit and physical inspection of a division's hazardous operations, and the controls and programs used to mitigate the identified hazards.

Once the review is complete the IFA team reports results, findings/observations that are not in compliance with regulatory requirements and any recommendations and/or corrections to the Environment, Health and Safety Division.

1.3 Scope

The scope of the IFA was to review all work authorizations, technical work conducted under these formal authorizations and inspection of areas where this work is carried out.

The EH&S Division has four Radiological Work Authorizations, five Sealed Source Authorizations, three Radiological Work Permits, two Low Activity Source Authorizations, One General License Authorization, one Activity Hazard Document, five permits for the Waste Management and Environmental services functions, three Safety Analysis Documents and several hazardous and radioactive waste accumulation areas.

2 Appraisal Process

2.1 Team

2.1.1 Team selection

The inspection team was comprised of technical specialists from the following fields: radiation protection, industrial hygiene, occupational

health industrial safety, electrical safety, environmental services, waste management and the EH&S Division Safety Coordinator. The appraisal team members and area of expertise they were selected for were:

Maram Kassis (EH&S) - IFA team leader/waste management

Matt Kotowski (EH&S) - Occupational safety

Christine Donahue (EH&S) – Radiation safety

Tom Caronna (EH&S) - Electrical safety

Larry McLouth (EH&S) – Industrial Hygiene/AHD program manager

Richard Debusk (EH&S) – EH&S Safety Coordinator/occupational safety

Ginny Lackner (EH&S) – Environmental permits specialist

Wendy Corr (EH&S) - Health Services

A representative from the Department of Energy (DOE) Berkeley Site Office (BSO), Carol Ingram, was invited and was able to participate as an observer.

All of the team members were present during the walkthroughs of the chosen locations and contributed to the appraisal.

2.1.2 Team member roles and responsibilities

All team members were given the responsibility to report all EH&S observations and findings identified. The appropriate subject matter experts were tasked with reviewing the different authorizations and any findings relating to them.

The review of the radiological work authorizations/permits and inspections of areas they covered were allocated to the radiation safety expert and the IFA team lead. The review of the EH&S AHD and the work it covers was covered by the industrial hygiene expert/AHD program manager, safety engineer and IFA team lead. The review of the environmental and waste management permits was allocated to an Environmental Services expert. Facility inspections were carried out by three groups of team members.

Document reviews and inspection findings and observations were sent to the IFA team lead for reporting. In addition to compiling the appraisal team and pertinent documents, other responsibilities of the IFA team lead included coordinating meetings, inspections and interviews with EH&S Division members responsible for area and authorizations appraised. The team leader also communicated results to appropriate

EH&S staff and prepared the final appraisal report.

2.1.3 Team meetings

The appraisal team conducted general meetings, inspections and reviews during June and July 2006. Due to conflicting schedules two preliminary informational meetings were held with the EH&S Division's IFA team members to review the process and scope of the IFA.

At these meetings the roles and responsibilities of the individual team members were outlined and the formal authorizations associated with the operations of the EH&S Division to be audited were identified and briefly reviewed.

In addition, team members met prior to facility and lab space inspections they were responsible for. Please refer to Appendix A for a more complete outline of meetings, work place inspections and interviews carried out. Findings and observations were documented and reported to the appraisal team leader as work place inspections and document reviews progressed.

A draft copy of the final IFA report was sent to the IFA team members for review on August 9, 2006.

2.2 Planning the Appraisal

2.2.1 Documentation and database reviews

Appropriate subject matter experts on the IFA team reviewed formal authorization and the EH&S databases.

RWAs, RWPs, SSAs and LASs were reviewed by the radiation safety expert. Permits and related Safety Analysis Documents were reviewed by the Environmental Services expert. Lists of Satellite Accumulation Areas, Mixed Waste Satellite Accumulation Areas, Waste Accumulation Areas, Radioactive Waste Collection Areas and associated inspections were reviewed by the Waste Management Specialist.

The EH&S Division Safety Coordinator reviewed the following databases: Hazards, Equipment, Authorizations and Reviews (HEAR), Supervisor's Accident Analysis Report (SAAR), LBNL Corrective Action Tracking System (CATS) and training. Results from past MESH reviews, IFA's, Self Assessments and Occupational Safety and Health Administration (OSHA) inspections were also reviewed.

Please refer to Appendix B for a complete list of reviewed IFA documents.

2.2.2 Identification of operations

The EH&S Division conducts operations under facility level, formal work and hazardous work authorizations.

The Hazardous Waste Handling Facility (HWHF) operates under a Part B permit issued by the California Department of Toxic Substances Control and related Safety Analysis Documents. As part of the requirements of this permit, waste management operations are covered by detailed procedures specifying types of work, maximum quantities and safety requirements.

The Environmental Services group also conducts operations under facility level authorizations, such as the Waste Water Discharge Permit, California General Industrial Stormwater Discharge Permit, Treated Ground Water Discharge Permit and the Soil Vapor Treatment Permit.

The Pit Room (Building 70) is rated as a radiological facility and operates under RWA 1122. All required controls, quantities and safety requirements are outlined in the RWA for this facility.

Based on formal work authorizations the following hazard spaces and operations were appraised: Building 26, Technical Services Group (TSG) laboratory; Building 75A, calibration range and legacy materials area; Building 75C, calibration facility. Walkthroughs of areas with SSAs, LASs, RWPs and GLAs were carried out. Hazards and field Work conducted by the Environmental Services Group (ESG areas) was reviewed in conjunction with the EH&S Self Assessment of that group.

Please refer to Appendix C for a complete list of appraised areas and operations covered by facility level and formal work authorizations.

2.2.3 IFA plan review

An EH&S Division IFA plan was sent to the steering committee June 8, 2006. The plan was accepted by the steering committee with the provision that an updated list of authorizations be provided and that the final report include a list of all the authorizations types from Section 2.2.1 of the IFA guidance. Those that do not apply are to be noted as non-applicable.

2.2.4 Scheduling interviews and field audits

Inspections, reviews and interviews were scheduled with the respective managers.

2.3 Field Audit

All work space areas where operations are conducted under an authorization were inspected. Three main groups of IFA team members inspected work spaces for safety, chemical, radiological work and electrical hazards. Personnel interviews were conducted during work space reviews. IFA team members noted all issues identified on field inspection sheets.

The IFA team leader compiled all work space area inspection results submitted via email or inspection sheets. The data was then review before being included into the final IFA report.

Refer to appendix A and Appendix C for IFA space review locations and personnel involved.

2.4 Interviews

Interviews were conducted as part of the work space inspections. During the inspections IFA team members asked questions of area managers and employees assigned to the area.

For HWHF work space and authorization reviews the following personnel were interviewed: Roshan Shadlou, Ricky DeGuzman, Anthony Fernandez, and Nancy Rothermich

For TSG and RPG work space and authorization reviews the following personnel were interviewed: Christine Donahue, David Rodgers, Bette Mohammad and Jim Floyd.

For ESG work space and authorization reviews the following personnel were interviewed: Ron Pauer, Pat Thorson, Mike Ruggieri and John Helsinki.

2.5 Photographs

Not Applicable.

3 Reporting Results

The results of the 2006 EH&S IFA are as follows:

3.1 Facility Permits/Authorizations

3.1.1 Safety Analysis Documents (SADs), Facility Safety Analysis Documents (FSADs)

The EH&S Division has an FSAD which details requirements for the work authorized by the Part B permit which the HWHF operates under. The Appraisal team had no findings with respect to the FSAD. The FSAD was partially reviewed and updated in May, 2006.

The Pit Room (Building 70-147A), SAD is current and details all the requirements for the work authorized by RWA 1122. The requirements were reviewed during the recent NMMSS audit and were found to be adequate.

The Radiation Detection Instrument Calibration Facility (Building 75C) Safety Analysis report identifies radiological hazards in the facility. The

Radiation Detection Instrument Calibration Facility is mainly used to perform neutron field calibration of radiation monitoring instruments. The facility was characterized as a radiological facility due to the containment of non certified sources. The Safety Analysis report was required as part of this categorization and was last updated in 2001. All requirements of the Safety Analysis were included in SSA 205 which was reviewed as part of the IFA inspections and was found to be adequate and current.

3.1.2 *Other EH& S Division permits (EPA, BAAQMD, SWRCB, EBMUD)*

The HWHF operates under a Part B permit, issued by the California Environmental Protection Agency State Department of Toxic Substances Control. A renewal application for the Part B Permit was submitted to DTSC in November of 2002. However, coverage is automatically extended until DTSC acts on the renewal application. A thorough inspection was performed by DTSC on May 23 and 24, 2006. No violations were found. Two minor labeling issues found were corrected on the spot and will not result in a citation. Although a final report is still pending a close-out meeting was held and it is anticipated no violations will be issued.

The facility is in compliance with all permit conditions. Training for work being carried out at the HWHF is documented and tracked in individual binders per the Part B Permit requirements. Training records are maintained and reviewed by the Certification Team within the Waste Management Group. The Part B permit, FSAD documentation and associated procedures are maintained by the HWHF Operations Team within the Waste Management Group. These documents reflect current work conditions and safety requirements.

The EH&S Division holds two site-wide East Bay Municipal Utility District (EBMUD) Permits for Sanitary Sewer Discharge and Ground Water Treatment Discharge. The Treated Groundwater Discharge permit covers the site restoration process whereby contaminated water is collected and treated before being discharged to the sewer. The permits outline the sampling and reporting requirements as well as discharge limitations for water being discharged to the sewer. The Treated Groundwater Discharge permit and process were last reviewed September of 2005 by the regulatory agency. There were no violations issued. All compliance requirements are being met, and users are made aware of discharge prohibitions for hazardous material. The permits are valid for one more year.

The EH&S Division also holds three separate Bay Area Air Quality Management District (BAAQMD) permits for the Soil Vapor Treatment systems associated with buildings 6, 7 and 53/58. The permits cover the process whereby air is pumped above contaminated ground water plumes and passed through charcoal canisters to remove organic vapors before being released to the atmosphere. The last inspection of the soil

vapor extraction units by the BAAQMD was in May, 2004. There were no violations issued.

The State Water Resources Control Board (SWRCB) Stormwater Discharge permit covers the storm water drainage system at the LBNL site. The physical LBNL site and stormwater drainage system are not typical of industrial sites. The permit details sampling, reporting and discharge limitations associated with storm water discharge. The permit technically expired in 2002; However, LBNL is in compliance as coverage was extended until passage of a new permit by the State Board. All compliance requirements, sampling, reporting and discharge limitations and documentation requirements have been met.

Please refer to Appendix D, IFA Field Inspection Guide, for compliance of permits appraised.

3.1.3 Formal *Work Authorizations*

Most authorizations in the EH&S Division are radiological work related. The EH&S Division has four active RWAs (1009, 1092, 1122, 1149), five active SSAs (104, 132, 202, 205, 207), three RWP's (04-001, 04-002, 04-006), two active LASs (L009, L011) and one GLA (415).

In addition the EH&S Division has one AHD and several hazardous and radioactive waste accumulation authorizations.

Walkthroughs and reviews of the RWAs, SSAs, RWP's, LASs and GLA confirmed that the authorizations are approved and signed, current, and that each lists the authorized users. All areas are posted as required and the documents reflect current work. All users on the authorizations have current training, as most are RCTs.

The AHD (2073) is approved, signed and was last reauthorized on May 15, 2006. The AHD lists roles and responsibilities of authorized users and reflects current work conditions and requirements.

The hazardous and radioactive waste accumulation authorizations sites were inspected. All areas were correctly labeled and in compliance.

Electrical safety compliance was inspected by the EH&S electrical safety expert. Building 26 consists of Health Services and Radiation Protection Group (RPG) spaces. While some of the RPG spaces contain old equipment, these were determined to be in good condition and applicable work practices were being followed. Building 85-HWHF has had several recent formal evaluations. All corrections except the forklift charger in 85-118 (violation of the NEC, already exists in CATS) have been entered into CATS and completed.

There are no energized work permits or lockout/tagout posted procedures required.

Please refer to Appendix D, for compliance of authorizations appraised.

3.2 Categorization

3.2.1 Noteworthy practices

Several noteworthy practices were identified during authorization reviews and work space walkthroughs. The development of a "User Survey SOP" by the Technical Services Group detailing the steps required for routine user surveys of work and storage areas in their laboratory. Technical Services Group lead requires Appendix A permits for below human hazard work carried out by the EH&S electronic technologists.

Figure 2 Noteworthy Practices Observed During the 2006 IFA

Item	Practice Observed	Basis	Lab-wide Applicability
1	The RWA 1009 project took the initiative to develop an 8-page "User Survey SOP" detailing the steps required for routine user surveys of work and storage areas in their laboratory. This procedure provides the radiation workers with details about instrument use, forms and common areas where surveys should be performed	Initiative is beyond what is expected of research groups and shows a strong commitment to meeting the requirements of the RWA.	Lab wide use of a detailed 'User Survey SOP' would result in documented surveys which are indicative of a well controlled and managed work area and program.
2	Technical Services Group lead requires Appendix A permits for below human hazard work carried out by the EH&S electronic technologists.	Initiative is beyond what is expected and shows a strong commitment to conducting work safely.	Promotes well-controlled and managed work practices.

3.2.2 Findings

Most findings identified were in the HWHF and included seismic hazards, fall protection and electrical safety issues. A complete list of all findings identified by the IFA team is listed in Appendix E.

3.2.3 *Observations*

Many observations were related to authorization reviews. Please refer to Appendix E for a complete list of all observations identified by the IFA team.

3.3 **Recommendations**

Recommendations for addressing specific observations and findings are presented in Appendix E.

General recommendations are:

Generally, hazards are identified and controlled adequately within the EH&S Divisions. However IFA/Self Assessment inspections indicated that there were opportunities for improvement:

Discrepancies existed between the lists of formal work authorizations provided by the division safety coordinator (listing from the ISM plan) versus what was provided by EH&S Group leaders. Several administrative errors were observed which indicate that there is a need to update and correct the current authorization list within the ISM plan. This could have been due to the timing of the list preparation for the ISM plan and the actual walkthrough-authorizations change frequently. An alternative method would be that the list should not be included as part of the ISM plan and the Division should provide employees with a resource as to where to find the most current list of formal work authorizations. A recommended pathway would be to ensure the availability of a database online from the EH&S homepage so links could be made automatically.

Deficiencies were observed in reviewed EH&S databases. These will be addressed under Self Assessment corrective actions.

4 **Corrective Action Tracking and Follow-up**

All deficiencies noted during the IFA were entered into the Corrective Actions Tracking System (CATS).

5 **Conclusion**

The EH&S Division, with a few exceptions, has an adequate Environmental, Safety and Health program in relation to work authorizations that is generally effective in identifying and controlling hazards.

Significant improvements were noted in the housekeeping/organization of work and storage areas. Excellent record keeping was observed for all authorizations. No single area within the EH&S Division was observed to have a large number of findings/observations and most deficiencies identified were minor.

Concerns noted in the previous IFA have been addressed. The issue of unsupervised electronics technicians working alone has been resolved. All possible institutional solutions, for the gun barrel detector shields, continue to be explored vigorously

Appendices

Appendix A IFA Team Meetings, Inspections and Interviews

Appendix B IFA Documentation Reference Sheet

Appendix C Operations and Areas Inspected

Appendix D IFA Field Inspection Guide

Appendix E Findings and Observations

Appendix A IFA Team Meetings, Inspections and Interviews

Meeting Date	Topic	Attendees
June 1, 2006	In conjunction with the EH&S self assessment the ESG team lead was interviewed regarding operations carried out by the group	Ron Pauer, Maram Kassis, Betsy MacGowan
June 6, 2006	Brief review of radiation related authorizations	Maram Kassis, Christine Donahue
June 16, 2006	Initial meeting discussing general outline of the appraisal and responsibilities of team members. Brief review of authorizations applicable to subject matter team members attending: Radiation safety expert and Environmental Services expert and appraisal team lead.	Christine Donahue and Robert Fox (later replaced with Ginny Lackner), Maram Kassis
June 21, 2006	Initial meeting discussing general outline of the appraisal and responsibilities of team members. Brief review of authorizations applicable to subject matter team members attending: EH&S safety coordinator, Occupational Safety, BSO representative, appraisal team lead.	Richard DeBusk, Matt Kotowski, Carol Ingram (BSO), Maram Kassis
June 29, 2006	Appraisal team meeting outlining site area inspections and interviews. Team members were organized into two groups for inspections. Team members were given copies of applicable work	Richard DeBusk, Matt Kotowski, Carol Ingram (BSO), Maram Kassis, Larry McLouth, Wendy Corr, Tom Caronna

	authorizations and documents to record inspection results.	
July 7, 2006	Initial meeting discussing general outline of the appraisal and responsibilities of team members. Brief review of the permits covering operations at the HWHF, sanitary sewer discharge, storm water management and soil vapor treatment. Team members attending: Environmental Services expert and appraisal team lead.	Ginny Lackner (Robert Fox replacement) and Maram Kassis
July 7, 2006	Review of Part B Permit	Ginny Lackner, Roshan Shadlou
Appendix A – Team Meetings, Inspections and Interviews		
Inspection / Interview Date	Location	Participants
June 7, 2006	In conjunction with the EH&S self assessment a walkthrough of all the Environmental Services Group work spaces.	Ron Pauer, Maram Kassis, Betsy MacGowan, Mike Ruggieri, Pat Thorson and John Jelinski.
June 20, 2006	Subcommittee consisting of Radiation Safety expert and IFA appraisal team lead inspected and reviewed documents at the HWHF and the Technical Services Group Laboratories covered by radiation related formal work authorizations.	Christine Donahue, Maram Kassis, Roshan Shadlou, Anthony Fernandez, David Rodgers and Bette Mohammad.

June 29, 2006	Subcommittee consisting of an occupational safety expert, an industrial hygienist and the appraisal team lead inspected the Hazardous Waste Handling Facility and outer buildings	Matt Kotowski, Larry McLouth, Maram Kassis, Roshan Shadlou, Ricky Deguzman
June 29, 2006	Subcommittee consisting of the EH&S Division Safety Coordinator, health services representative and electrical safety expert inspected Buildings 26 and 75.	Ricahrd DeBusk, Wendy Corr, Tom Caronna, Carol Ingram
July 5, 2006	Subcommittee consisting of an occupational safety expert and the appraisal team lead inspected the Pit Room (radiological facility), Building 70 147 and 147A	Maram Kassis. Matt Kotowski, John Van Wart
July 13-14, 2006	Radiation safety expert conducted walkthroughs of the other spaces covered by radiation related EH&S authorizations.	Christine Donahue

Appendix B IFA Documentation Reference Sheet

DOCUMENT TYPE/TITLE	Reference (Doc #, dates, etc.)
Facility Permits / Authorizations	
Safety Analysis Documents (SADs) Final Safety Analysis Documents (FSADs)	Final Safety Analysis Document (FSAD) for the Building 85 Hazardous Waste Handling Facility
	The Pit Room (Building 70-147A), Safety analysis Document (SAD)
	The Radiation Detection Instrument Calibration Facility (Building 75C), Safety Analysis
Discharge permits (sewer, storm water, air)	Wastewater Discharge Permit, EBMUD 06600791 California General Industrial Stormwater Discharge Permit, State Water Resources Control Board 2011002421 Treated Groundwater Discharge Permit, EBMUD 503478910 Soil Vapor Treatment Permit, BAAQMD Plant # 723 S-189 (building 6), S-192 (Building 7) and S-190 (Building 53/58)
Facility Permit	Waste Management Hazardous Waste Facility Part B Permit, California Department of Toxic Substances Control, EPA 4890008986
Formal Work Authorizations	
Activity Hazard Documents (AHDs)	Activity Hazard Document 2073: EH&S Waste Management Procedure 852: Onsite Transportation and Desensitization of Reactive Hazardous and Mixed Wastes
Radiological Work Authorizations (RWAs)	RWA 1009: Technical Services group
	RWA 1092: Radioactive Material Transportation Office
	RWA 1122: Radioactive Material Storage Facility (Pit Room)
	RWA 1149: Hazardous Waste Handling Facility (HWHF) Radioactive and Mixed Waste Operations
Radiological Work Permits (RWPs)	RWP 04-001: Site wide Radiological Scoping Surveys at LBNL
	RWP 04-002: Characterization and Processing of Legacy Radioactive and Mixed Waste Samples
	RWP 04-006: Legacy Radioactive Material Storage and Characterization
General License Authorizations (GLAs)	GLA 415: Sealed Sources used in Radioactive training classes as a demonstration aid
Sealed Source Authorizations (SSAs)	SSA 104: EG&G CAM source
	SSA 132
	SSA 202
	SSA205

DOCUMENT TYPE/TITLE	Reference (Doc #, dates, etc.)
	SSA 207
Low Activity Source Authorizations	LAS L009: Environmental Services Group
	LAS L011: Environmental Services Group
X-ray Authorizations (XAs)	N/A
Human Subjects	N/A
Biological Use Authorizations/Registration	N/A
Waste Management Group information on Satellite Accumulation Areas (SAAs) and Waste Accumulation Areas (WAAs)	Satellite Accumulation Areas (SAAs): Buildings 26, 75 and 85
	Waste Accumulation Areas (WAAs): Buildings 85, 51
	Mixed Waste Satellite Accumulation Areas (MWSAAs): Buildings 26, 76 and 85
	Radioactive Waste Collection Areas (RWCAs): Buildings 26, 75 and 85
Hazardous Work Authorization / Permits	
Confined Space Permit	N/A
Energized Work Permit (A and B)	N/A
Fire Safety Permit	N/A
Lock Out Tag Out	N/A
Surface Penetration Permit	N/A
Ultracentrifuge Use	N/A

 IFA Team Leader Signature

 Date

Appendix C Operations and Areas Inspected

Date	Building and Room	Auth. Type/ID	Operation/Work Area Description and Comments
6/20/06	Building 85/Rooms MW1, MW2, MW3, MW4, MW5, MW6, MW7MW8, RW1, RW2, scintillation vial room and staging area	RWA 1149 RWP04-002	Radioactive and mixed waste operations. Authorization covers routine work in the radioactive materials areas and radioactive materials storage area of the HWHF.
6/20/06	Building 26/Rooms 6, 24, 30, 31, 32. Building 75/Room 127 Building 76/ Room 135	RWA 1009	Radiological analyses on a variety of samples. Sample preparation and purification and sample counting.
6/29/06	Building 26/Rooms 6, 24, 30, 31, 32. Building 75/Rooms 109, 113, 127, 131 Building 75A/Room 102, 103, 104 Building 75C/Room 101 Building 76/ Room 135	RWA 1009, RWA 1092, LAS L011, SSA 202, SSA 205, SSA 207, SAAs, MWSAAs and RWCA's	Radiological analyses on a variety of samples. Sample preparation and purification and sample counting. Radioactive Material Transportation Office activities: <ul style="list-style-type: none"> - Shipment of radioactive material - Receiving and delivering radioactive material Storage of sealed sources.
6/29/06 7/19/06	Building 85/Rooms MW1, MW2, MW3, MW4, MW5, MW6, MW7, MW8, HW1, HW2, HW3, HW4, HW5, HW6, HW7, HW8, HW9, HW10, HW11, Hw12, HW13, HW14	RWA 1149 RWP-04-002 Part B permit, FSADs, WAA, AHD 2073, SAAs, MWSAAs and RWCA's	Radioactive and mixed waste operations. Authorization covers routine work in the radioactive materials areas and radioactive materials storage area of the HWHF. Storage and handling of hazardous and mixed waste materials.

Date	Building and Room	Auth. Type/ID	Operation/Work Area Description and Comments
6/20/06	Building 85/Rooms MW1, MW2, MW3, MW4, MW5, MW6, MW7MW8, RW1, RW2, scintillation vial room and staging area	RWA 1149 RWP04-002	Radioactive and mixed waste operations. Authorization covers routine work in the radioactive materials areas and radioactive materials storage area of the HWHF.
6/20/06	Building 26/Rooms 6, 24, 30, 31, 32. Building 75/Room 127 Building 76/ Room 135	RWA 1009	Radiological analyses on a variety of samples. Sample preparation and purification and sample counting.
6/29/06	Building 26/Rooms 6, 24, 30, 31, 32. Building 75/Rooms 109, 113, 127, 131 Building 75A/Room 102, 103, 104 Building 75C/Room 101 Building 76/ Room 135	RWA 1009, RWA 1092, LAS L011, SSA 202, SSA 205, SSA 207, SAAs, MWSAAs and RWCAAs	Radiological analyses on a variety of samples. Sample preparation and purification and sample counting. Radioactive Material Transportation Office activities: <ul style="list-style-type: none"> - Shipment of radioactive material - Receiving and delivering radioactive material Storage of sealed sources.
6/29/06 7/19/06	Building 85/Rooms MW1, MW2, MW3, MW4, MW5, MW6, MW7, MW8, HW1, HW2, HW3, HW4, HW5, HW6, HW7, HW8, HW9, HW10, HW11, Hw12, HW13, HW14	RWA 1149 RWP-04-002 Part B permit, FSADs, WAA, AHD 2073, SAAs, MWSAAs and RWCAAs	Radioactive and mixed waste operations. Authorization covers routine work in the radioactive materials areas and radioactive materials storage area of the HWHF. Storage and handling of hazardous and mixed waste materials.
7/5/06	Building 70/Room 147 and 147A	RWA 1122, SSA 132	Radiological facility, storage of high activity research material.

Date	Building and Room	Auth. Type/ID	Operation/Work Area Description and Comments
7/13/06- 7/14/06	Building 75/Rooms 109, 113, 127, 131 75D/Room 103	RWA 1092, SSA, LAS L009, LAS L011, SSA 104	Radiological analyses on a variety of samples. Sample preparation and purification and sample counting. Radioactive Material Transportation Office activities: - Shipment of radioactive material - Receiving and delivering radioactive material Storage of sealed sources.
7/25/06	Building 51	WAA	Accumulation of hazardous waste
	Building 71, Cave A	RWP 04-006	Reviewed in early July by Chris Donahue and terminated within short time of the IFA effort. It was the RWP for "storage only" of the items in B71, Cave A. At the time this RWP was reviewed, the RWP Manager was preparing the new RWP (04-014) for the contractor to perform the work in B71, Cave A. Once the new RWP was signed, RWP 04-006 was cancelled. The IFA preceded the actuation of RWP 04-014.
	Building 70A 3377	GLA 415	This was reviewed in early July by Chris Donahue. It is the authorization for sources/consumer products locked in the training room storage cabinets. The materials are used in the Radiation Safety training courses. There are no record-keeping or survey requirements for GLAs except to report transfers, owner changes and losses.

Appendix D IFA Field Inspection Guide

Appendix D - Field Inspection Guide

Authorization Type:

Hazardous Waste Facility Permit

Location(s): Building 85

Authorization Number/Reference:

EPA CA 4890008986/CA DTSC

REVIEWED

Administrative	Yes	No	Not Obs/App
Authorization approved and signed	X		
Authorization current	X		
All users listed on authorization	X		
All users trained in accordance with authorization requirements	X		
Authorization accurately reflects work being conducted	X		
Authorization posted / available in work area	X		
Other: See comments			
Hazardous Work Permits			
Confined Space Permit			X
Energized Work Permits (EWP - A, B)			X
Fire Safety Permit			X
Lock Out Tag Out (LOTO)			X
Energized Work Permits (EWP - A, B)			X
Permit to Penetrate Surface			X
Work Area Occupational and Environmental Safety and Health			
Access and egress	X		
Biohazards			X
Chemical Hygiene and Safety	X		
Chemical Management System status	X		
Compressed gasses	X		
Confined space			X
Cryogenic			X
Electrical	X		
Energy			X
Ergonomic considerations			X
Exit Routes, Emergency Action Plans, and Fire Prevention Plans	X		
Elevated locations and guarding	X		
Lasers			X
Lead			X
Machine tools			X
PPE	X		
Pressure			X
Soldering			X
Thermal			X
Walking and working surfaces	X		
Welding			X
Other Hazards:			
Radiation Protection			
Radioisotope Journal up to date			X
Contamination/Inventory Control: meters, material storage, waste segregation, housekeeping			X
Exposure Control: shielding, dosimetry, PPE, food/drink			X
Posting & Labeling: rooms, sinks, equipment			X

Appendix D - Field Inspection Guide

	REVIEWED		
Equipment Authorization - Certification/calibration/logs	Yes	No	Not Obs/App
Autoclave			X
Biosafety Cabinet			X
Clean Room			X
Crane Hoist			X
Eyewash / Safety Shower	X		
Fire Extinguishers	X		
Flammables Cabinet/Refrigerator	X		
Fork Lift / Heavy Equipment Operator	X		
Fume Hood	X		
Glove Box	X		
Hand and Shoe Counter	X		
Local Exhaust System	X		
Monitoring / Alarm System	X		
Photoprocessing Equipment			X
Sonicator			X
Ultracentrifuge			X
Other			X
Waste Management			
WAA compliance	X		
SAA compliance	X		
Environmental Services			
Air emissions		X	
Sanitary sewer discharge		X	
Storage tanks - aboveground or underground		X	
Storm water management		X	
Treatment systems		X	
Field Interviews			
Knowledge of authorizations, procedures, etc.	X		
Knowledge of safety systems	X		
On-the-job training	X		
Safety concerns, how to communicate concerns	X		
Comments			
A renewal application for the Part B Permit was submitted to DTSC in November of 2002. The permit states that it expires 5/3/03; However, coverage is automatically extended until DTSC acts on the renewal application. A thorough inspection was performed by DTSC on May 23rd and 24th, 2006. No violations were found. Two minor labeling issues found were corrected on the spot and will not result in a citation. Although a final report is still pending a close out meeting was held and it is anticipated no violations will be issued. All submittal training, reporting, general responsibility, corrective and disposal requirements have been met.			
The facility is in compliance with all permit conditions.			
Performed By: Ginny Lackner		Date: 7/7/06	
Name / Signature			
Reviewed By: Maram Kassis/Ginny Lackner		Date: 7/7/06	
Name / Signature IFA Team Leader			

Appendix E Findings and Observations

Appendix E Findings and Observations

Item No.	Building & Room #	Description of Finding (#'d items) or Observations (lettered items)	Regulation or Policy Citation	Recommendation or Corrective Action	Entered CATS? Y/N
1	85A	Drums and materials in storage racks higher than 4 feet are not on pallets. This requires personnel to be exposed to a fall hazard while accessing the storage shelf and while loading stored materials on a forklift pallet	29CFR 1910.23 & 29CFR1910.24	Remove stored material with full use of fall protection, then store only palletized material to eliminate fall hazard	y
2	85, Rm 219	Two liquid oxidizers and organic peroxides storage cabinets are anchored to the wall with drywall screws that would not hold the cabinets in case of an earthquake.	PUB-3000, 23.4.1	Replace the drywall screws with substantial brackets that are anchored to the cabinet and to the studs or to the floor in such a manner that the cabinet will meet the anchoring requirements of the California Building Code.	y
3	85, Rm 118	An electric forklift charger is sitting on the floor, not anchored, and permanently wired into the building power system with a flexible cord.	29CFR1910.303(b)(2)	Install and wire replacement charger in accordance with all current electrical requirements.	Already exits in CATS
4	85, Rm 106	The trench cover gratings had been unfastened for cleaning and were missing. The gratings may not have the strength to support the full weight of the forklift .	29CRF1019.22(d), 29CFR1910.176(a)	Have the trench covers in the area reviewed by a structural engineer to verify their adequacy and secure the trench covers as designed or have them approved by the structural engineer for use without fastening.	y

Appendix E Findings and Observations

Item No.	Building & Room #	Description of Finding (#'d items) or Observations (lettered items)	Regulation or Policy Citation	Recommendation or Corrective Action	Entered CATS? Y/N
A	26	RWA1009 authorization states that "Monthly, users must conduct meter and swipe surveys of lab work and storage areas." Only quarterly surveys of storage areas are performed.	EH&S 707, Pub 3000 CH 21 and the EHS 400/432 radiation worker training	If this is an agreed upon frequency, then the RWA should be updated to reflect this change. Responsible RCT needs to check survey frequency as part of their routine compliance surveys report any discrepancies.	
B	85-HWHF	Procedures EHS 849 (Neutralization) and EHS850 (Consolidation) are referenced as working procedures in RWA1149, IFA team was unable to locate evidence of procedure training for any of the listed radiation workers on RWA 1149 in the maintained training binders. However documented procedure training was provided by the responsible PI.	EH&S 707, Pub 3000 CH 21 and the EHS 400/432 radiation worker training	All current training records should be documented and maintained in employee training binders located in Building 85B.	
C	85-HWHF	It is clear that the training records are not being routinely audited (B85B) as part of the RWA compliance monthly review and this is an expectation of the assigned RCT.	EH&S 707, Pub 3000 CH 21 and the EHS 400/432 radiation worker training	Recommend placing a copy of the rad worker's OJT with a summary of the current procedure training in the RIJ	
D	85-HWHF	Room numbers and partial RSAs are not clearly delineated on the RWA1149 map. RMAs were easily identified.	EH&S 707, Pub 3000 CH 21 and the EHS 400/432 radiation worker training	Recommend adding room numbers to the RWA1149 map and clearly delineate partial RSA's on the map.	

Appendix E
Findings and Observations

Item No.	Building & Room #	Description of Finding (#'d items) or Observations (lettered items)	Regulation or Policy Citation	Recommendation or Corrective Action	Entered CATS? Y/N
E	26	The old version of User Survey Form is still in use for RWA 1009.	EH&S 707, Pub 3000 CH 21 and the EHS 400/432 radiation worker training	Responsible RCT needs to provide RWA 1009 with current version of User Survey Form	
F	26-24	Rad waste , Sections F&G of waste tag not filled out. This was the most recently completed issue.	Waste Management Generator Guidelines	This issue has been corrected.	
G	85, Rm 211	A first aid kit was noticed. The kit is required by the Part B permit	Part B permit	Recommend that the contents of the kit and the restocking of the kit be reviewed by the Health Services physician.	
H	85, Rm 114	The portion of the wiring in this room that is not Class 1, Div. 2 rated may not be in compliance with the provisions of the permit.	Part B permit	Verify that the installation of wiring other than Class 1, Div. 2 in this room is not in violation of the provisions of the permit.	
I	85-HWHF	Currently no formal mechanism exists for tracking and documenting procedural training records within Waste Management	PUB 3000, FSAD	Certification Group is currently working on a process to document procedural training	